NSNFP National Spent Nuclear Fuel Program	MANAGEMENT OF THE SPENT FUEL DATABASE	Doc. No.: PSO 19.02 Revision: 2 Eff. Date: 02/27/04 Page: 1 of 11 DAR No.: NSNF-499

Approval: M. D. Gardner MDG By RLB Date: 2/25/04
Manager, National Spent Nuclear Fuel Program

Approval: R. L. Blyth RLB Date: 2/25/04
NSNFP Quality Assurance Program Manager

I. PURPOSE AND SCOPE

This procedure describes the processes used to maintain the Spent Fuel Database (SFD), the SFD data, and distribution of data from the SFD. The SFD is composed of available data related to the U.S. Department of Energy (DOE) spent nuclear fuel (SNF) inventory.

The SFD is intended for storage and retrieval of data for SNF scoping, planning, and programmatic decision-making by the National Spent Nuclear Fuel Program (NSNFP) and other recipients of the data.

II. SUMMARY

This SFD software configuration has been previously baselined and has a controlled software plan in the NSNFP Document Control Center (DCC). This procedure addresses the process and controls used to collect, update, and check data entries in the SFD. This procedure addresses developing and checking queries to provide responses from requesters for specific data residing in the SFD. This procedure also addresses controls for electronically formatted data provided to requesters.

SFD Version 5.0.1 (L.A. Version) is the only authorized source of data to support NSNFP inputs to the Yucca Mountain Project License Application, unless specifically authorized otherwise by the responsible Program Support Organization (PSO) technical lead.

The NSNFP routinely communicates with the DOE entities to obtain updated data developed during interim storage and transportation activities that result from updated fuel location, configuration changes, and fuel data.

The updated fuel data are formally evaluated by NSNFP via an internal review package, and when authorized, the updated data are incorporated into an interim version of the SFD. The change authorization process includes an impact evaluation to determine the impacts the changes will have on the current licensing basis.

The interim SFD is maintained as an up-to-date record of data used to support programmatic decisions unrelated to repository licensing activities. The SFD is composed of a software program and data files. SFD version updates are prompted by software changes, data changes, or both.

III. PROCEDURE

A. Core Software Change Control

PSO Technical Staff

1. Identify changes to the core software for the SFD when a new feature within the SFD is desired or the current core software ceases to function properly and discuss with the PSO Technical Lead.

PSO Technical Lead

2. Consider the request that the SFD core software be modified to either correct a deficiency or add a new feature to the core software.

PSO Technical Staff

3. Coordinate with the SFD software engineer to establish and document work scope and cost estimates for the identified changes.

4. Report to the PSO Technical Lead with an estimate of the work scope and cost for the software and documentation changes.

PSO Technical Lead

5. Determine if the changes should be implemented.

PSO Technical Staff

6. Revise and issue the Functional and Operational Requirements as necessary using NSNFP procedure PMP 6.01.

7. Revise the Software Requirements Specification (SRS) and the Software Design Description (SDD), as necessary, to reflect the approved changes. Make changes according to PMP 6.01.

8. Modify the software in accordance with approved software documents.

9. Test the revised core software (RCS) on a *clean platform* (see glossary).

10. If the RCS does not perform as required, go back to Step III. A.7.

11. If the RCS does perform as required, place the new version on the Local Area Network.

12. Evaluate the RCS on a PSO Technical Staff computer.

    a. If not satisfied that the new version provides the features or corrections desired, go back to Step III. A.7.

    b. If satisfied, report to the Technical Lead that the changes have been made and the software performs as required.

13. Verify by test that the RCS will not run with the Version 5.0.1 dataset.

PSO Technical Lead

14. Evaluate the new version of the SFD.

    a. If not satisfied with the new version, go back to Step III. A.7.

    b. If satisfied with the RCS, authorize release of the SFD.

PSO Technical Staff

15. Assign a new version number to the SFD.

B. Updating the SFD Data

PSO Technical Staff

1. Collect potential updates to the SFD data when one of the following conditions occurs.

    a. An error is discovered in the existing SFD data.

    b. More complete data are found.

    c. Updates in inventory are provided.

2. Coordinate with DOE SNF Sites to obtain available SNF data and changes thereto.

    a. When changes in inventory are known or suspected, send a request for an updated SNF inventory to the applicable SNF site point of contact.

    b. As necessary, request clarifications to any data received. Make the request via formal letter, e-mail, or documented telephone conversation.

3. Retain a working copy of the data and clarifications provided and transmit a record copy to the Document Control Center for retention at file location 1360.2.

4. As needed, create an Excel spreadsheet to allow sorting of the data by physical or chemical characteristics, to facilitate aggregating the data in the SFD, or to facilitate review of proposed changes.

    a. If the DOE SNF Site response includes data about individual fuel units that are of a similar type (heavy metal content or burnup as an example), create (unless already provided) an Excel spreadsheet using the response to determine the average values for individual fuel units and the total for the record.

    b. Save Excel spreadsheets on a network drive for reference purposes.

5. When directed by the PSO Technical Lead, prepare a SFD data change package, Form 19.02-2.

6. Perform independent review of change package and sign Form 19.02-2.

PSO Technical Lead

7. Review SFD data change package to determine if changes are appropriate and document the determination on Form 19.02-2.

PSO Technical Staff

8. Open the appropriate SFD record in the edit mode and enter the updated data as authorized by approved Form 19.02-2.

   a. Enter the name of the new spreadsheet created for the records in the table identified as "Spreadsheets" within the access data of the SFD.

   b. Prior to saving each changed SFD record, update the Source Code/Reference window as necessary to indicate the source of the data, the authorized SFD change number, and the file location in the NSNFP Document Control Center.

   c. Attach the spreadsheet to the SFD record by selecting it from the general screen before saving the SFD record.

   d. Ensure an Excel icon appears in the tool bar indicating the spreadsheet is attached and available for review from the SFD.

9. If the Source Code/Reference window is correct or has been corrected, then save the record and check the entered values against the applicable source document.

   a. If the entered values do not agree with the source document, go back to Step III. B.8.

10. Verify the changes with an independent review and sign Form 19.02-2.

11. Evaluate the impact of the change according to Form 19.02-2.

12. Record production date on Form 19.02-2.

13. Copy the SFD MDB file to a compact disc with a file name of SFD.xx.MDB, where xx is the SFD changes.

14. File complete SFD change package in the NSNFP DCC.

15. After completion of all authorized changes, assign a new version number to the SFD and file the SFD version with the NSNFP DCC.

C. Developing Responses to Questions Using Queries within the SFD

PSO Technical Staff

1. Coordinate with the requester to determine the desired data fields to be included in the response.

2. If a request is made from an individual external to the PSO Technical Staff, request DOE Idaho Operations Office approval before proceeding with the query.

3. Create a new query or modify an existing query with the data fields as specified in the request and in the same order. Include in the query the value for the current value MTHM whether or not the requester asked for these data.

   a. Unless directed otherwise by the PSO Technical Lead, use only data from SFD Version 5.0.1 (L.A. Version).

   b. If the data are to be directly used for *NRC-licensed activities* (NLA; see glossary), proceed to Step III. C.4.

   c. If the data will not be used for NLA,

      (1) Run the query.

      (2) Run a similar query from the locator.

      (3) Compare the MTHM values and the number of records from the two queries.

      (4) If the results of the two queries are identical, proceed to Step III. C.8.

4. Run the query and note the number of records involved and the total MTHM obtained in the SFD Query Verification, Form 19.02-1.

5. Run a similar query in the locator. Include the same parameters as the query run from the raw data (i.e., location, management plans, irradiating reactor, SNF composition, storage configuration, standard canisters, SNM type, and grouping).

6. Note the number of records in the results and the value for total MTHM. If the values are not the same as obtained in the query run from the raw data, go back to Step III. C.3.

7. Once the results are the same in both queries:

   a. Save the query used and assign it a unique name that indicates the data use and SFD version (i.e., source term Version 5.0.1) for future reference and retrieval.

PSO Technical Staff

b. Attach a copy of the SQL (Structured Query Language) statement from the query to the SFD Query Verification.

c. Document the results of both queries on Form 19.02-1 and transmit the record copy to the Document Control Center.

d. Perform independent checks of mathematical formulas and results and document them on Form 19.02-1.

8. Go to Section D, Control of Electronic Information, to transfer the response to the requester in electronic format.

D. Control of Electronic Information

PSO Technical Staff

1. To transfer data in electronic format, copy the results into Microsoft Excel.
2. If the data are used for NLA, go to Step III. D.4.
3. If the data are not used for NLA, furnish the Excel spreadsheet to the requester.
4. Add the "Checksum" feature to the Excel spreadsheet by entering an equation "=sum (then select numerical data by highlighting the area)."
5. Copy the exact value into an adjacent cell by doing a "copy" and then "paste special" and select from the popup window "Values." The same value should appear in the cell.
6. Set the decimal to three places to the right of the decimal.
7. Subtract the second cell value from the first—the value should read 0.000.
8. Furnish the Excel spreadsheet to the requester.
9. Verify with the requester that the "Checksum" value equals 0.000.
10. If the Checksum value does not equal 0.000, go back to Step III. D.4 and use another method of furnishing the spreadsheet.

IV. REFERENCES

None.

V. DEFINITIONS

Terms appearing in italics followed by the notation "see glossary" are defined in the NSNFP Documents Manual Introduction and Glossary.

VI. ATTACHMENTS

None.

VII. RECORDS

The following records generated as a result of this procedure require retention in accordance with the identified classification and NSNFP Program Management Procedure 17.01.

Lifetime

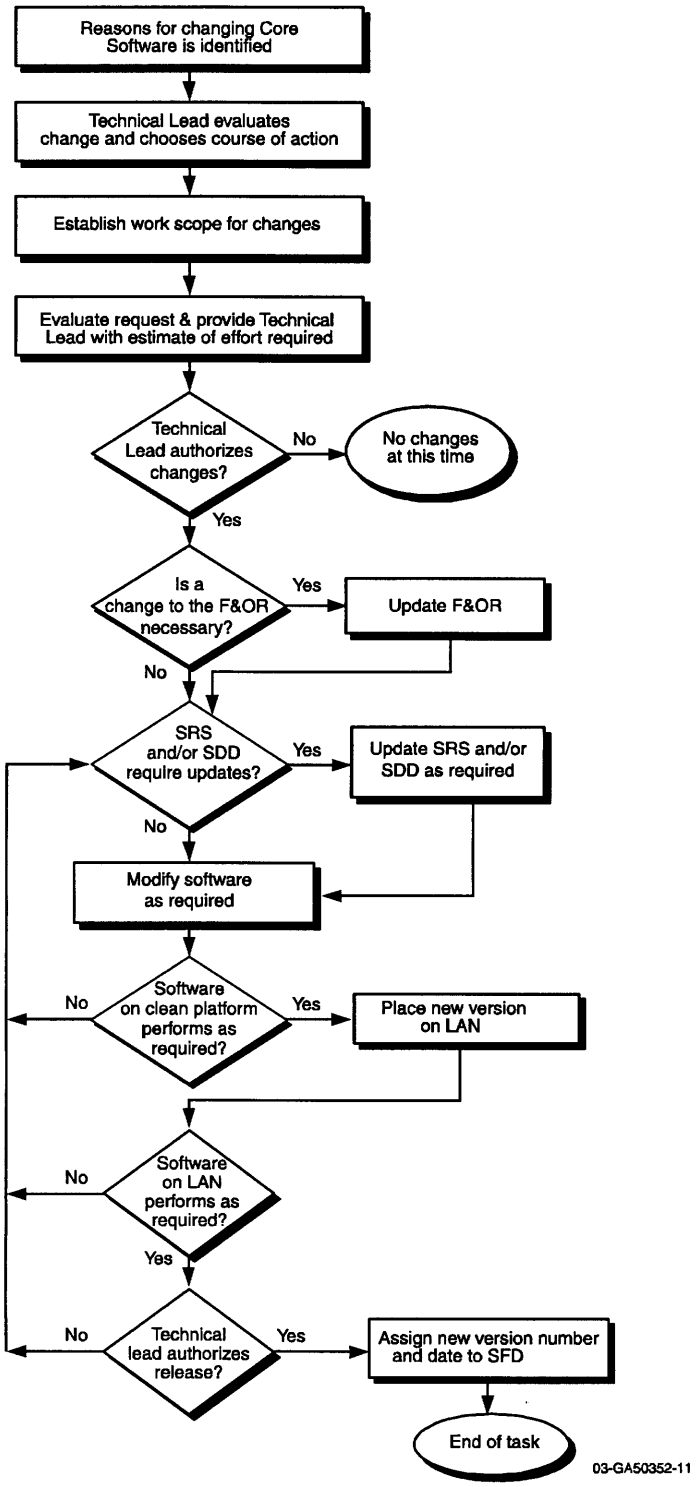
None.

Nonpermanent

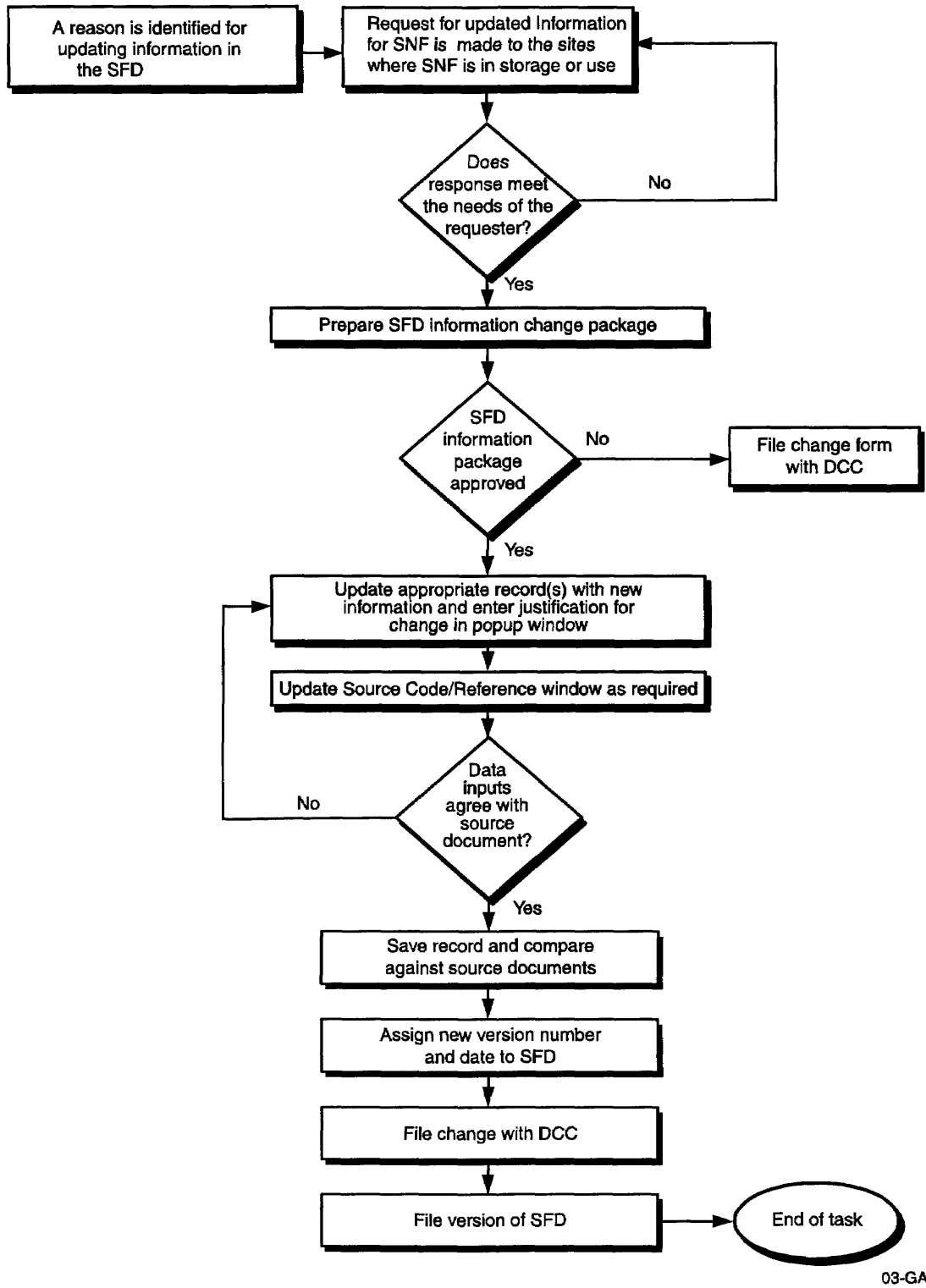
None.

VIII. PROCEDURE FLOW DIAGRAM

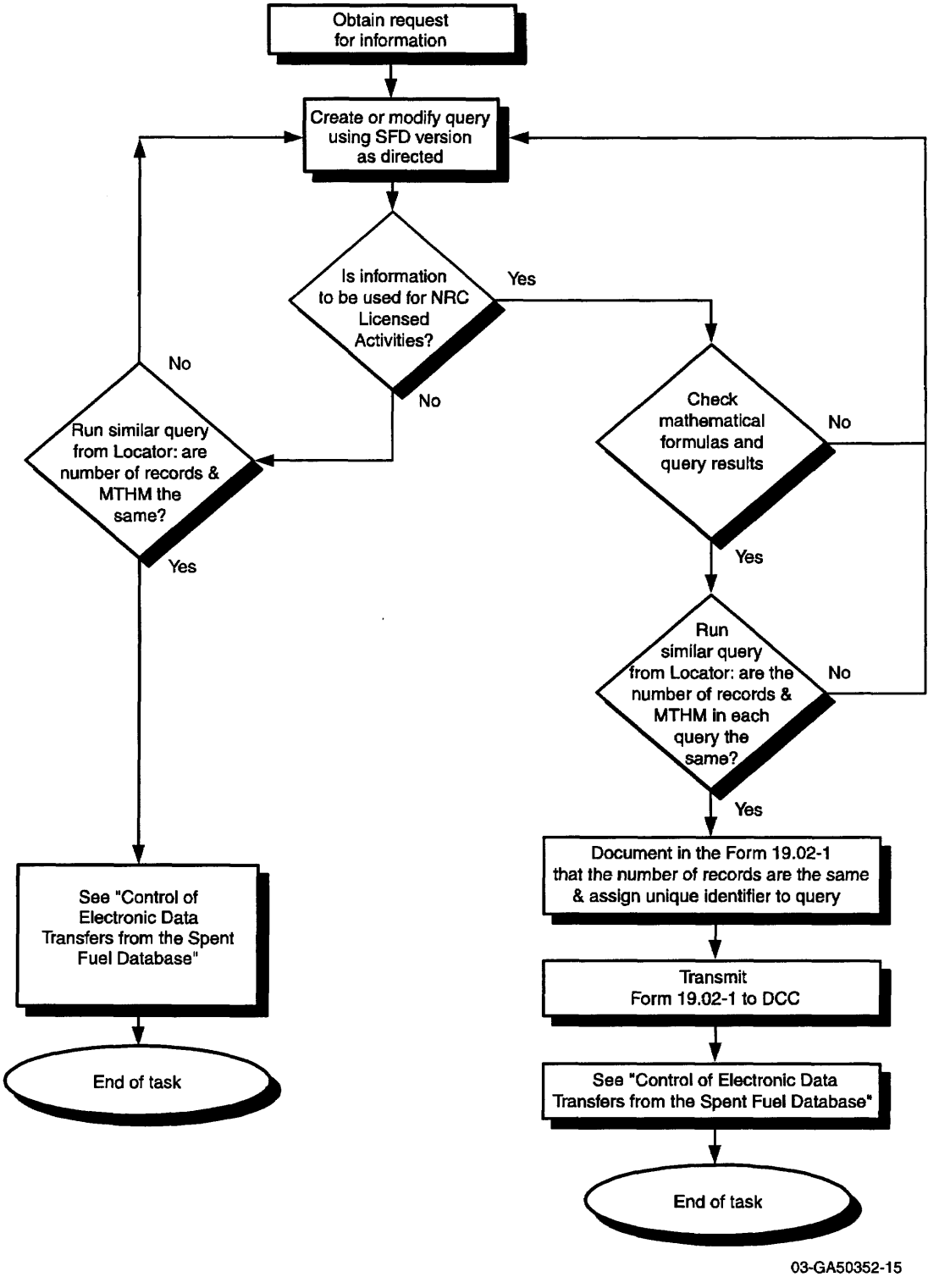
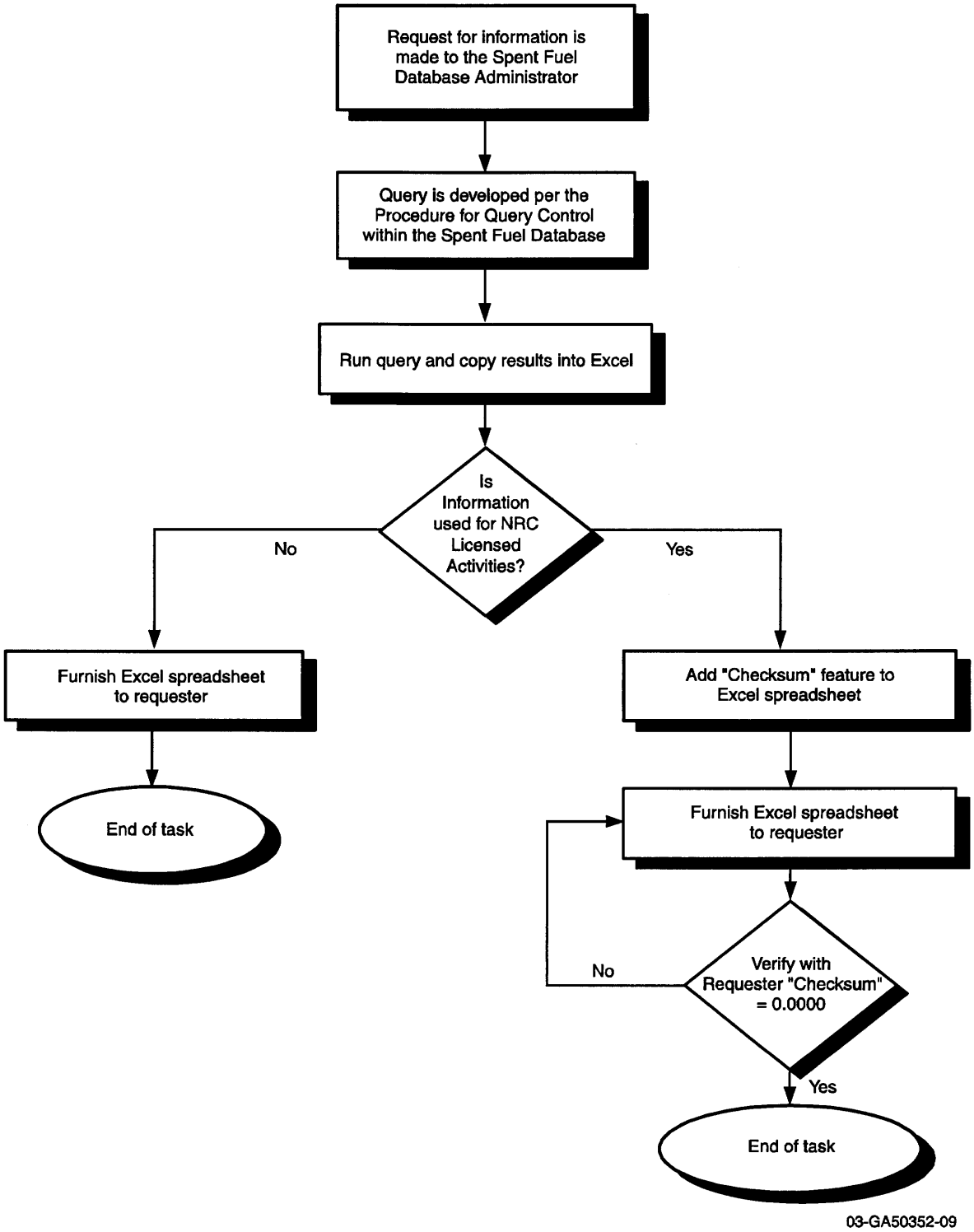
Core Software Change Control



Updating the SFD Information



Developing Responses to Questions Using Queries within the SFD



Control of Electronic Information